

Cancer in Northern Ireland by 2002

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Accepted 1 September 1996

Summary

An estimate of cancer deaths and incidence for the years 1997 and 2002, taking account of current trends and population projections for Northern Ireland is presented below. These numbers will be of value to those planning services and, in particular, for those implementing the report "Cancer Services – Investing for the Future".¹ Cancer deaths are expected to rise by almost 13% to 4056 by the year 2002. Marked rises are expected in the number of deaths from cancer of the lung, oesophagus, kidney, bladder and prostate with smaller rises in deaths from breast and pancreatic cancer.

The fall in stomach cancer is expected to continue as is the trend of lower deaths from cervical cancer. Deaths from cancer of the colon and rectum are expected to remain static. Estimates of cancer incidence currently and for the years 1997 and 2002 are also included. The impact of tobacco use by the population, which poses a current and future serious threat to public health is highlighted.

INTRODUCTION

In April 1995, following wide consultation, the Secretary of State for Health unveiled a strategic framework for the future development of cancer services. This was based on a policy framework for commissioning cancer services: "A report by the Expert Advisory Group on Cancer to the Chief Medical Officers of England and Wales" (the Calman Report).² The Expert Advisory Group considered evidence regarding the current position of cancer services in England and Wales and made recommendations. These were to ensure equal access to high quality cancer care for all people, irrespective of where they live. It was recommended that cancer services should be organised as a network which included primary care and care in the community, secondary care in District General Hospitals, designated as cancer units, with tertiary care provided in large cancer centres. The cancer unit and cancer centres would be closely integrated with good communication between the three levels of care.

The Department of Health and Social Services in Northern Ireland established a Cancer Working Group under the chairmanship of the Chief Medical Officer, Dr Henrietta Campbell. Their remit was to consider how the recommendations of the Expert Advisory Group's report might best

be implemented in Northern Ireland. The Cancer Working Group's report "Cancer Services – Investing for the Future"¹ includes recommendations which emphasise multidisciplinary, multiprofessional team management of patients, and effective communication between the newly designated cancer centre, cancer units and primary care. Unfortunately, the absence of accurate information on the numbers of cancers occurring in the population could hamper the planning of these important changes. Incidence data will be available from the re-established Cancer Registry by mid 1997, alas too late for this Cancer Working

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Group. Anyone working on planning services for haematological malignancies, colorectal cancer and malignant melanoma can thank those far-sighted enough to establish disease-specific registries for these tumours. The N. Ireland Cancer Registry has already produced trends for cancer deaths over the past 25 years.³ This has given a basis from which to estimate the number of cancer deaths and further extrapolate an expected number of cancers in various major groups for Northern Ireland.

METHODS

The trends in the World Health Organisation age standardised mortality rates⁴ for each sex and age band were calculated for those under 65 years and those over 65 years. The standard errors of these trends were also calculated. The average age-specific rates for the two age groups (under and over 65 years) were calculated using deaths 1985-1993 and the 1991 mid year population estimates.⁵ This was to produce the reference points to which the trends would be applied. The historical trends were applied to the 1991 rates and extrapolated forward to 1997 and 2002 to produce the expected number of deaths in those years. 95% confidence intervals were calculated for each year using the standard error of the beta co-efficient of the regression lines to provide an estimate of the variation associated with the projections. These were scaled up, using incidence to mortality ratios,^{6,7} to estimate the numbers of new cases per year.

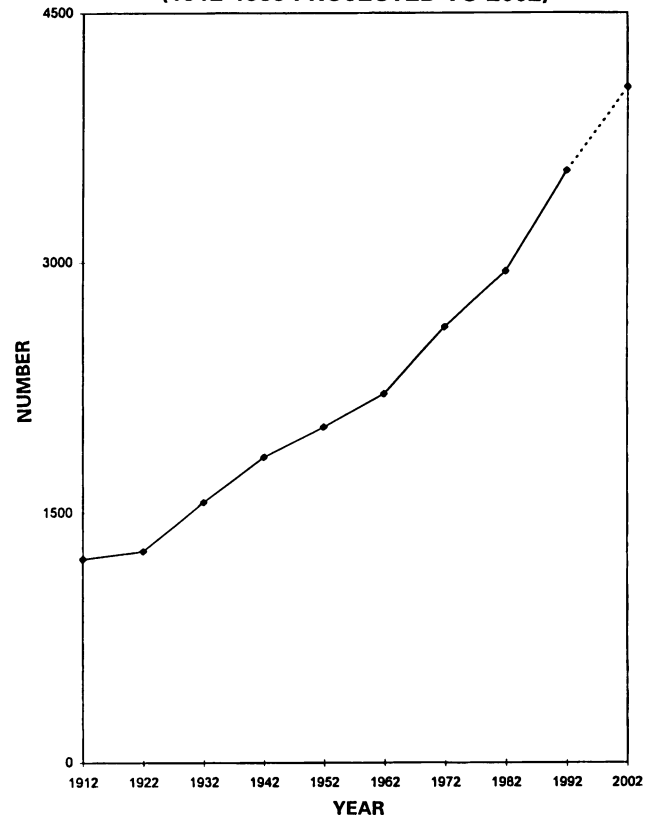
RESULTS

It is estimated that by 2002 the total number of cancer deaths will have risen by 13%, from 3,595 (the average 1989-1993) to 4,056. (See Figure 1). The number of lung cancer deaths will rise by 30% to 1,033. The fall in deaths in men under 65 from 160 to 129 will be offset by an increase in deaths among older men and women (see Table I). The number of lung cancers diagnosed is expected to rise from current estimates of 953 to 1,239 by 2002 (see Table II). The fall in levels among younger men will again be offset by the rise in levels among older men and both older and younger women.

Deaths from cancer of the oesophagus are expected to rise 35% by 2002 to 157. The biggest increases will be in younger men while in women the rise will be mainly in those over 65, giving rise to an expected 58 female oesophageal cancer deaths.

Figure 1

DEATHS DUE TO CANCER N. IRELAND (1912-1993 PROJECTED TO 2002)



New cases diagnosed are expected to rise to 181 per year by 2002 (see Table I).

Cancer of the stomach should continue to fall so that by 2002 there should be 104 male cancer deaths and 59 stomach cancer deaths in women (see Figure 2 and Table I). The numbers of stomach cancers diagnosed is also expected to fall to 212 by 2002 (see Table II).

The number of deaths from cancers of the colon and rectum are expected to remain unchanged over this period. A fall in deaths among older women and, to a lesser extent amongst younger women is predicted to be offset by the rise in deaths of older men (see Table I).

Deaths from cancer of the pancreas are expected to rise by about 4% to 165 per year with 190 new cases predicted in 2002 (see Tables I & II).

Deaths from breast cancer are expected to rise by 8.6% to 342 by the year 2002 though the confidence intervals in this are fairly wide. New cases diagnosed each year are expected to rise from an estimated 630 in 1991 to 685 by the year 2002. Deaths from cancer of the cervix which are showing a downward trend may fall further by 2002 (see Figure 3 and Table III).

TABLE I
Estimated deaths from selected cancers in N. Ireland 1997 and 2002

Site	ICD	Age	Male			Female			Total			95% CI±
			Current Annual Average	Predicted	Predicted	Current Annual Average	Predicted	Predicted	Current Annual Average	Predicted	Predicted	
Oesophagus	150	<65	25	32	38	6	6	6	31	38	44	0
		>65	43	53	61	41	48	52	85	100	113	12
		Total	68	84	99	48	54	58	116	138	157	12
Stomach	151	<65	36	29	25	17	13	11	53	43	35	4
		>65	93	86	80	75	59	48	168	145	128	9
		Total	129	116	104	92	72	59	221	187	163	13
Colon	153	<65	40	41	42	36	34	33	76	75	74	2
		>65	112	119	123	149	144	138	261	263	261	9
		Total	152	160	165	185	178	171	337	338	336	11
Rectum	154	<65	18	18	18	11	10	9	29	28	28	1
		>65	51	54	56	39	35	31	90	89	88	2
		Total	69	73	75	50	45	40	119	117	115	3
Pancreas	157	<65	22	20	18	19	19	19	40	39	37	1
		>65	53	57	58	65	68	69	118	124	127	0
		Total	75	76	77	84	87	88	158	163	165	1
Lung	162	<65	160	144	129	71	83	91	232	227	220	27
		>65	391	446	490	171	250	323	563	697	813	40
		Total	552	590	619	243	333	413	794	923	1033	65
Bladder	188	<65	12	12	12	40	42	42	52	54	54	0
		>65	51	57	61	47	49	50	98	1906	111	5
		Total	62	69	73	88	91	92	150	160	165	5
Kidney	189	<65	16	17	17	1	2	2	17	18	19	0
		>65	26	32	39	10	13	16	36	45	54	5
		Total	42	49	55	11	15	18	53	64	73	5
All Cancers		<65	536	536	527	527	543	547	1063	1079	1074	11
		>65	1320	1480	1602	1212	1319	1380	2532	2799	2982	64
		Total	1856	2017	2129	1738	1861	1927	3595	3878	4056	75

Deaths from cancer of the kidney and renal parenchyma (ICD 189) are expected to rise by 39% from 53 in 1991 to 73 in 2002. Most of this increase will be accounted for by a continued rise in deaths in older men (see Figure 4 and Table I). It is calculated there will be 132 new cases of kidney cancer diagnosed in the year 2002 (see Table II).

Deaths from cancer of the prostate are expected to rise by 20% to 219 by the year 2002. This

increase based on current trends (see Figure 5) will be totally in men over 65. The predicted number of new cases diagnosed is 416 for the year 2002 (see Table III).

Deaths from bladder cancer are predicted to rise by 10% to 165 in the same period. This increase will be largely in men over 65. It is expected there will be 496 new cases of this cancer diagnosed by the year 2002.

TABLE II
Estimated incidence of selected cancers in N. Ireland 1997 and 2002

Site	ICD	Age	Male			Female			Total			95% CI±
			Estimated	Predicted	Predicted	Estimated	Predicted	Predicted	Estimated	Predicted	Predicted	
			1993	1997	2002	1993	1997	2002	1993	1997	2002	
Oesophagus	150	<65	29	36	43	7	7	7	36	44	51	1
		>65	50	61	70	48	55	60	98	116	130	14
		Total	79	97	114	55	62	67	133	159	181	15
Stomach	151	<65	47	38	32	22	17	14	69	55	46	6
		>65	121	112	103	97	76	63	218	188	166	11
		Total	168	150	135	119	93	77	287	244	212	17
Colon	153	<65	54	56	56	48	46	44	102	102	100	3
		>65	151	161	167	201	194	186	352	355	353	12
		Total	205	217	223	249	240	230	454	457	453	15
Rectum	154	<65	21	22	22	13	12	11	35	34	33	2
		>65	61	65	68	47	42	38	108	107	105	3
		Total	83	87	90	60	54	49	143	141	138	5
Pancreas	157	<65	25	23	21	21	22	22	46	45	43	1
		>65	61	65	67	75	78	79	136	143	147	0
		Total	86	88	88	96	100	101	182	188	190	1
Lung	162	<65	192	173	155	86	99	109	278	272	264	30
		>65	469	536	589	206	300	387	675	836	976	48
		Total	662	708	743	291	399	496	953	1108	1239	78
Bladder	188	<65	35	36	37	121	125	126	156	161	162	0
		>65	152	170	183	142	148	151	295	318	334	16
		Total	187	206	219	263	273	277	451	479	496	16
Kidney	189	<65	29	30	30	3	3	4	31	33	34	2
		>65	46	58	69	18	24	28	64	82	98	4
		Total	75	88	100	21	27	32	95	115	132	6

TABLE III
Estimated deaths and incidence from cancers of the breast, cervix and prostate in N. Ireland 1997 and 2002

Site	ICD	Age	Deaths			95% CI±	Incidence			95% CI±
			Estimated	Predicted	Predicted		Estimated	Predicted	Predicted	
			1993	1997	2002		1993	1997	2002	
Breast (female)	174	<65	148	159	165	11	296	318	330	21
		>65	167	175	177	0	334	349	354	0
		Total	315	334	342	11	630	667	685	21
Cervix	180	<65	21	18	17	3	56	50	45	7
		>65	16	15	13	2	43	39	36	6
		Total	37	33	30	5	99	89	82	13
Prostate	185	<65	15	15	15	0	28	29	29	0
		>65	168	188	204	13	319	357	387	25
		Total	182	203	219	13	347	386	416	25

Figure 2
TRENDS IN AGE STANDARDISED MORTALITY RATES (65 YEARS AND OVER) FROM CANCER OF THE STOMACH
N.IRELAND 1969-93

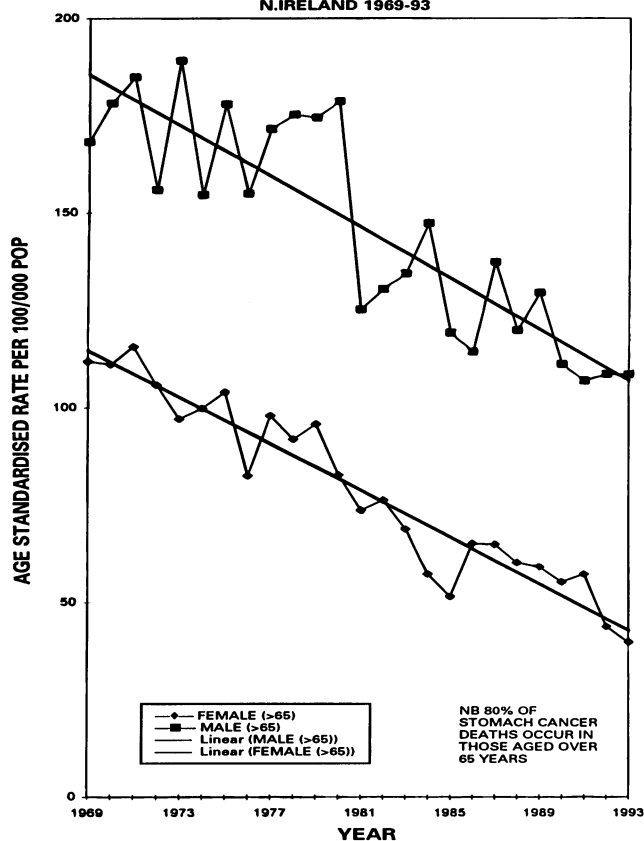


Figure 3
TRENDS IN AGE STANDARDISED MORTALITY RATES FROM CANCER OF THE CERVIX
N. IRELAND 1969-93

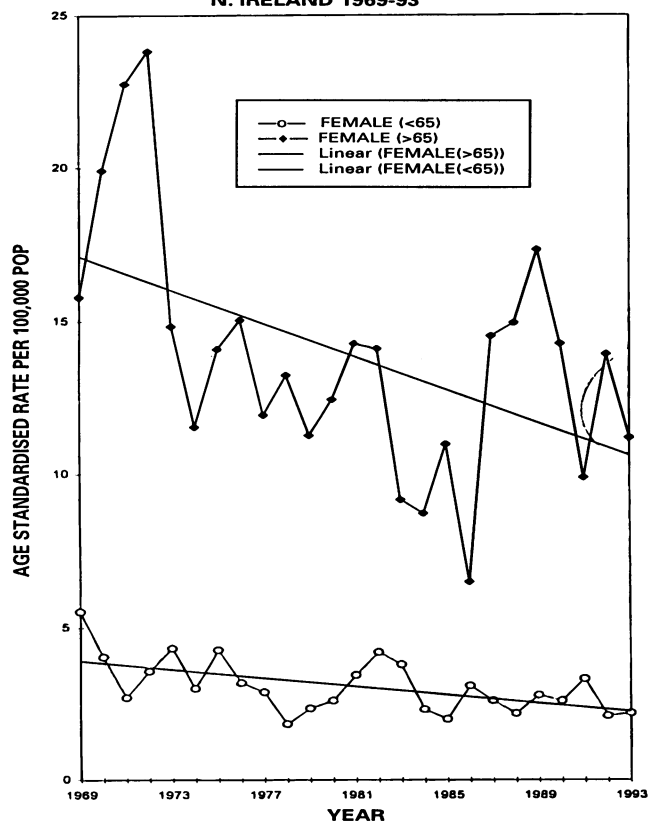


Figure 4
TRENDS IN AGE STANDARDISED MORTALITY RATE (65 YEARS AND OVER) FROM CANCER OF THE KIDNEY (ICD 189)
N. IRELAND 1969-93

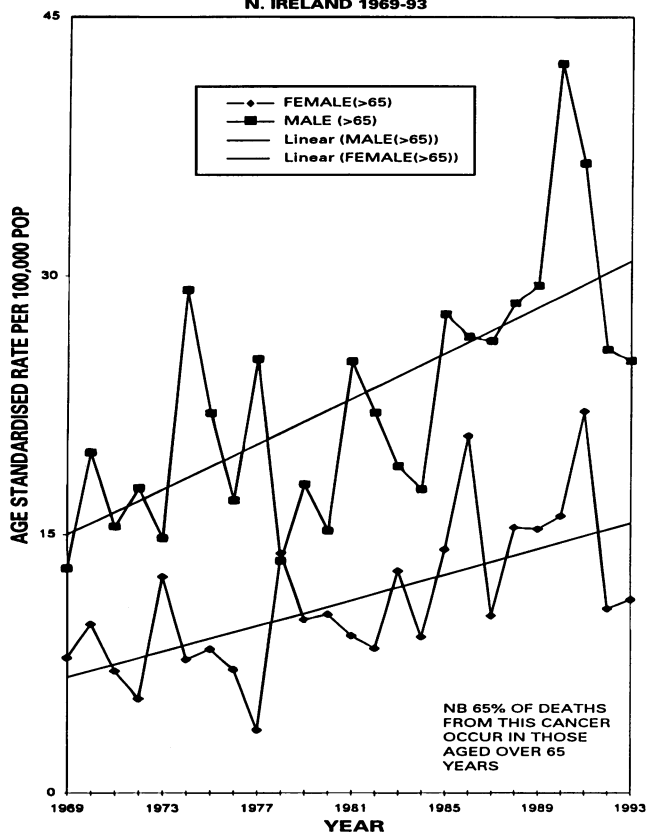
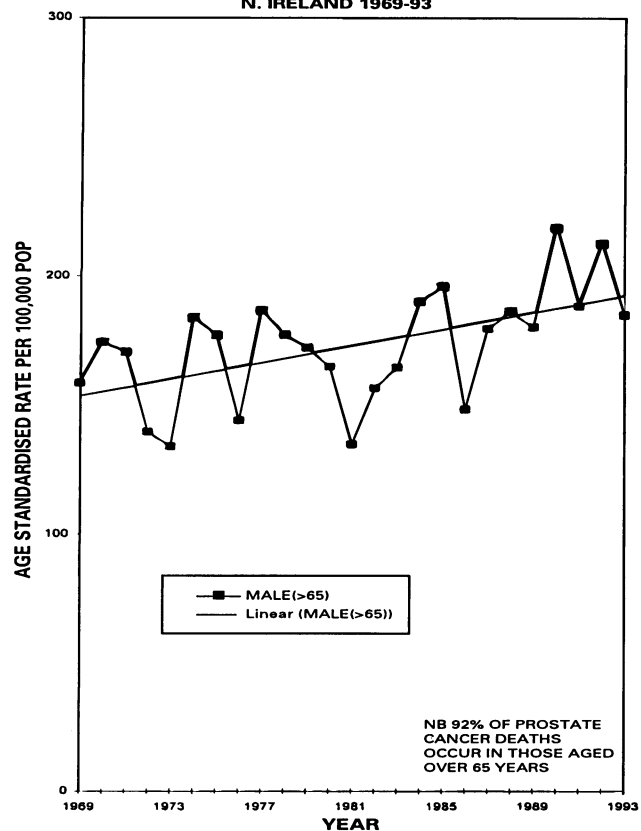


Figure 5
TRENDS IN AGE STANDARDISED MORTALITY RATE (65 YEARS AND OVER) FROM CANCER OF THE PROSTATE
N. IRELAND 1969-93



DISCUSSION

Planning for the future is fraught with difficulties though it is better to best-guess than not to plan at all. It is important, however, that the assumptions built into a planning model are explicit so that they can be challenged and if necessary modified. The assumptions used to calculate the deaths and numbers of new cases are as follow:

1. That the population projections are correct.
2. That the trends in cancer mortality rates, over the previous 25 years 1969-1993, for Northern Ireland continue into the near future.
3. That the ratios for incidence to mortality (the number of new cases per year compared to the number of those who died from the cancer) do not alter significantly and the Northern Ireland population has similar characteristics to the Welsh and Scottish populations.

This analysis takes into account projected changes in the population albeit at the safer aggregate levels of over and under 65 years.

The number of cancers in a population is dependent on the incidence rate and the size and age structure of that population. It is estimated that the population of N. Ireland will increase by 4.8% between 1991 and 2002⁵ (5.5% for males and 4.2% for females). This alone will increase the numbers of cancers and cancer deaths. Other things being equal, an older population will generate more cases, as cancer is largely a disease of older ages. The population of N. Ireland is not only increasing but it is also becoming older. Between 1991 and 2002 the number of males over 65 are predicted to increase by 10.8%, females by 6.0%.

Almost half of the anticipated increase in female cancer deaths and 60% cancer deaths in males will be due to demographic change. The remainder is mostly due to risk factor change, although the interaction between demography and risk will account for approximately 2.5% and 4.5% respectively.

An important premise is that the incidence to mortality ratio should remain constant. Only time will tell if this was valid. It is possible that risk factor change may affect both incidence and survivorship and that new therapies and/or better organisation of cancer services may reduce mortality rates independently of incidence rate change. Also, the calculations cannot take account

of newer methods of diagnosing cancers which may become common-place by the year 2002. An example of this would be the use of Prostatic Specific Antigen in the detection of prostatic cancer. This would increase the numbers of prostatic cancers diagnosed, although experience from elsewhere indicates that the death rates from the disease would not be affected.⁸ The 20% increase in prostatic cancer deaths predicted reflects the changing numbers and age structure of the population. The rise in breast cancer deaths by 8.6% is also largely due to demographic changes with more older women in the population. The calculation has not taken account of the possible impact of the N. Ireland Breast Screening Programme which aims to reduce breast cancer deaths by 25% in the screened population by 2002 (estimated deaths prevented at 20 per year). The standardised mortality ratio 1980-1992 for breast cancer, which takes age into account, fell from 27.7 to 24.5 while the numbers of deaths rose by 41 to 331 deaths by 1993.³

The predicted rise in deaths from cancer of the lung, oesophagus, pancreas and bladder reflects not only the changing demography but is also a legacy from the use of tobacco in previous years. It is known there is an approximately 20 year lag between tobacco use and the development of lung cancer in a population.⁹ The patterns of tobacco use in the 1980's should, with population changes, determine the rise or fall in numbers of tobacco-related cancers in the early 21st century. There has been a reduction in the prevalence of smoking in N. Ireland, yet in 1994 almost a third, 31% of men and 32% of women, were recorded as current smokers, higher than 28% for England and Wales. Smoking levels were highest in the age group 35-54 where 42% of men and 39% of women smoked. These smokers, especially the women tended to smoke more than the average. Tobacco-related cancers may also occur in the population of ex-smokers. In 1994 half of men and a quarter of women aged 55-74 were ex-smokers as were 26% of men and 19% of women aged 35-54.¹⁰

The trend of rising deaths from lung cancer among young women more than offsets the health gain achieved by falling tobacco use by younger men. This is likely to continue. Currently 27% of men and 33% of women aged 16-34 are smokers. This identifies an area for urgent attention to protect the health of the population in N. Ireland and achieve the targets of the N. Ireland Regional

Strategy for reduction in lung cancers.¹¹ The target for 2010 is to reduce the death rate from lung cancer by at least 30% in men under 75 and 15% in women under 75.

The need for accurate incidence information on cancer, a major disease group which accounts for 23% of deaths, over 20,000 hospital admissions and an unmeasured amount of health service resources is again highlighted. We look forward to the time when the N. Ireland Cancer Registry is regularly producing timely accurate information on cancer in N. Ireland for the purposes of research, education and planning of services. In the meanwhile these predictions should assist the N. Ireland Cancer Working Group in making decisions on the future of cancer services and enhance the precision of data available to those planning cancer services.

ACKNOWLEDGEMENTS

We wish to thank Breige Torrains, Lorraine Crichton, Dr Richard Middleton and Nuala Brady in the N. Ireland Cancer Registry for assistance with the production of the manuscript and figures. Thanks are also due to DHSS (NI), the Ulster Cancer Foundation and the NI Breast Screening Service which fund the work of the Cancer Registry.

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